

CLAIMS

22. (Currently Amended) An optical device capable of changing characteristics when subjected to localized heating comprising:

an optical wave guide; and

a material in contact with the waveguide, wherein the contact area between the waveguide and the material defines an interface, the material being arranged to absorb a predetermined wavelength of light, the predetermined wavelength being at an energy level sufficient to heat the material,

wherein the material is arranged to transfer at least some of the heat to a region of the waveguide at the interface to cause a permanent change in the optical properties of the region of the waveguide at the interface, thereby reducing optically induced alterations of the waveguide whilst the device is exposed to the light.

23. (Previously Presented) An optical device in accordance with claim 22, wherein the device is arranged to allow at least some of the heat transferred to the interface to vary the inherent stresses at the interface to reduce birefringence in the waveguide.

24. (Currently Amended) An optical device capable of changing characteristics when subjected to localized heating, comprising:

a substrate; and

an optical waveguide formed on the substrate, which is substantially transparent to a predetermined wavelength of light; and

~~a substrate formed on~~ the contact area between the waveguide and the substrate defining an interface,

the substrate being arranged to absorb the predetermined wavelength of light to cause localized heating at the interface,

wherein the substrate is arranged to transfer at least some of the heat to a region of the waveguide at the interface, the localized heating causing permanent changes in optical properties of the region of the waveguide at the interface of the waveguide.

Please add the following new claims 25 – 32.

25. (New) An optical device in accordance with claim 22 wherein the material is located outside the waveguide.

26. (New) An optical device in accordance with claim 22 wherein the material is located within the waveguide.

27. (New) An optical device in accordance with claim 22 wherein the material comprises a substrate on which the waveguide is formed.

28. (New) An optical device in accordance with claim 22 wherein the device comprises an interferometric system and the waveguide comprises one arm of the interferometric.

29. (New) An optical device in accordance with claim 22 wherein the localized heating causes thermal relaxation, thermal diffusion or induces damage in the material.

30. (New) An optical device in accordance with claim 22 wherein the localized heating is used to write a grating structure in the waveguide.

31. (New) An optical device in accordance with claim 22 wherein the predetermined wavelength of light is a submicron wavelength.

32. (New) An optical device capable of changing characteristics when subjected to localized heating, wherein the device comprises an optical waveguide formed on a substrate selected to absorb a predetermined wavelength of light in the sub-micron range, the waveguide being selected to be substantially transparent to the predetermined wavelength of light in the sub-micron range, wherein the localized heating causes permanent changes in optical properties of a region of the waveguide, and occurs as a result of exposing the device to light of the predetermined wavelength at an energy level sufficient to heat the substrate.